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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/192,205	11/13/1998	GAIL A. ALVERSON	324758001US	9482

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EXAMINER

BANANKHAH, MAJID A

ART UNIT

PAPER NUMBER

2127

DATE MAILED: 09/15/2004

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/192,205

Applicant(s)

ALVERSON ET AL.

Examiner

Majid A Banankhah

Art Unit

2127

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-66 and 105-124 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-66 and 105-124 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to Amendment A, filed on November 20, 2002. Applicants electing the claims of group V without traverse are acknowledged. The elected claims 30-66, and the newly added claims 105-124 are presented for examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 30-66, and 105-124 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The independent claims 30, 41, 51, 59, and 112 are reciting a productive use of the resource (see for example claim 30, "before the resource can be used productively). This implies that the resources can be used in a non-productive manner such as non-optimized way. While the specification teaches of task being blocked (or not blocked), which means the resource is being used or not being used by the task. There is no teaching as to a resource being used by a task in a non-productive manner.

Claims 31-40, 42-50, 52-58, 60-66, 10-111, and 113-124 are rejected for the rejection of their parent claims.

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3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 30-66, 105-124 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 30, 41, 51, 59, and 112 recites productive use of the resource which makes the claim indefinite. In the specification the resource is either is in use or not in use. As it is explained in the rejection or claims under 112 first paragraphs, the task is either blocked (cannot use the resource) or unblocked. That is to say, either the resource is being used or not being used.

Claims 31-40, 42-50, 52-58, 60-66, 10-111, and 113-124 are rejected for the rejection of their parent claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims are rejected under 35 U.S.C. 103(a) as being unpatentable over Brokenhagen et al (US Pat. No. 6,567,839, hereinafter Brokenhagen).

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Per claims 30, 41, 51, 59, and 112, the reference of Brokenhagen teach: assigning the resource to a thread (col. 6, ln. 63 to col. 7, ln. 30, the processor executing a thread); receiving notification from the thread assigned to the resource that the thread is waiting for an occurrence of an event before the resource can be productively used (col. 8, ln. 61, col. 9, ln 7, stall the processing of the thread); upon receiving the notification, un-assigning the resource from the thread (col. 7, ln. col. 8, lns. 56-63, thread switch communication means); and after occurrence of the event, reassigning the resource to the thread (col. 8, ln. 59 to col. 9, ln. 7, thread switch event).

The reference of Brokenhagen fails to explicitly teach of client server environment. However, using a processor as a client is well known in a multiprocessor multithreading environment. By definition, a client is a computer that access shared network resources provided by another computer (called a server) as in the client/server architecture. For the reason to make use of the "distributed intelligent" to treat both the server and the individual workstations as intelligent. Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use a client server environment in order to treat the server and the individual workstation as intelligent, programmable devices, thus exploring the full computing power of each.

Per claims 31, 52, wherein the server upon receiving the notification assigns the resource to another client (col.7, ln. col. 8, lns. 56-63, thread switch causes the processor [a computer resource] re-assigned to another thread).

Per claims 32, 42 wherein the server is an operating system, the clients are tasks, and the resource is a processor resource of the computer system (Brokenhagen, col. 3, lns. 54-60, breaking larger task into smaller tasks, and thread, and col. 7, ln. col. 8, lns. 56-63, thread switch causes the processor [a computer resource] re assigned to another thread).

Per claims 33-34, 43-44, 53-54, 60-61, and 113-114, wherein the processor resource is single threaded (33)/ multithreaded (34). This limitation is taught by Brokenhagen in col. 15, lines 50-56, single and multithread switching.

Per claims 35, 45, 62, and 115, wherein the operating system upon notification assigns the processor resource to another task (Brokenhagen, switching is assigning the processor to another thread or task, col. 8, lns. 53 to col. Col. 9, lns. 7).

Per claims 36-37, 46, 55, 63 the method of claim 32 wherein the task can only perform idle processing until the event occurs (Brokenhagen, col. 23, lines 52-60, idle loop).

Per claims 38, 57 the method of claim 32 wherein the operating system reassigns the processor resource to the task whenever an external event directed to the task occurs (Fig. 2, 290).

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Per claims 39, 47-48, 58, 64-65, 106, 107, 116-117, 119, and 120, the method of claim 32 wherein the notification is received by the operating system in response to informing the task that the task is to be swapped out from processor resource utilization. It is well known in the art that External interrupt (Fig. 2, 290) is used for informing the task for different purposes including notification for swapping the task in and out from execution. Additionally see Brokenhagen in col. 7, ln. col. 8, lns. 56-63 thread switch communication means. Regarding the limitation of "task determining whether it cannot productively use the processor resource until an event occurs after receiving an indication from the operating system that the task is to be swapped out from the processor, it must be pointed out the event mechanism is external interrupt and there are several causes to the interrupt including swapping the task from processor utilization. Therefore, this is condition that could be set by a programmer (see Brokenhagen, col. 7, lines 10-30, setting a bit in the thread switch control register).

Regarding the limitation of team of threads (claims 106, 119), the terminology and concept is notoriously well known in the art. In the early days of multithreading concept, a set of process having a common shared memory was called a team. Later the team changed name to thread. Therefore, it is well known in the art that a set of instruction having a common memory to be called team. It is also well known in the art that as long as every member of the team is busy, the task should not be swapped out. Therefore, the interrupt is issued before the last set of instructions or threads has finished its job.

Per claims 40, and 50 the method of claim 32 wherein the operating system assigns a task to the processor resource by assigning the task to a domain (Brokenhagen, col. 8, lines 19-52, registering the state of the thread).

Per claims 49, 56 and 66 wherein the task can perform no processing until the event occurs. A task which is switched cannot perform processing because the resource in processing time. When there is no processing time, there is no processing happening.

Per claims 105, and 118, the method of claim 39 wherein the task comprises multiple streams and wherein a master stream provides the notification that the task is waiting for an occurrence of an event after all the other streams have quit (Brokenhagen, col. 7 to col. 8, lns 18).

Per claim 108, and 121 the method of claim 106 wherein each stream stores its own state before quitting the stream or notifying the operating system (Brokenhagen, col. 6, lines 12-21).

Per claims 109, and 122, the method of claim 106 wherein each stream that is not a team master stream quits its stream. It would have been obvious to quit (a thread not to stay active) when the processing is finished for the reason that that non-active threads do not execute and decrease efficiency.

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Per claims 110-111, and 123-124, the method of claim 106 wherein the notifying of the operating system by the task master stream includes indicating whether the task is blocked so that the operating system can defer swapping in the task until an event occurs to unblock the task (Brokenhagen, col. 20, ln. 52 to col. 21, ln. 7, flexibility to change thread switch and a locking loop can change the frequency of thread switches).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Majid A. Banankhah** whose telephone number is (571) 272-3770. The examiner can normally be reached on Monday – Thursday, 8:00 AM – 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756.

Information regarding the status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Maid Banankhah

5/17/04


MAJID BANANKHAH
PRIMARY EXAMINER